his attending clinician. This is possibly a wise procedure in those obscure cases where we feel confident that there are primary foci which we have been unable to locate. As a routine procedure, however, we can hardly at present recommend it. In the lack of an autogenous vaccine, it is possible that a slight overdosage with parathyroid extract would produce similar results.

We are now ready for a consideration of the proper treatment of a case of focal infection. Having located as many primary and secondary foci as we are able, we proceed with their surgical removal; that is to say, the removal of all the accessible foci. Where both teeth and tonsils are involved, it is claimed that better results are obtained if all the infected teeth are removed before the tonsils are excised. For the removal of teeth with periapical infection, the consensus of opinion seems to be in favor of Shearer's method of external alveolectomy, since it facilitates the complete exposure to view of the infected area. The extraction of large numbers of infected teeth at a single sitting, in these cases, is not the wisest procedure, because of the possibility of causing a violent flare-up of all symptoms. And in that connection it should be said, that probably the cases in which a flare-up is caused, are the ones which will be most benefited by the eradication of the infection. It is often important to reassure the patient by pointing out to him this fact, lest the exacerbation should prompt him to abandon treatment. In regard to the extraction of teeth, nothing is a more reprehensible mode of procedure than for the physician to order all the patient's teeth out merely on the suspicion that some of them are infected. There are many cases when complete extractions are indicated, but it is the blind and ruthless ordering of wholesale extractions which we are condemning. After the dentist has removed the infected teeth, and reconstructed the mouth for mastication, the clinician should see to it that all other accessible foci are likewise removed, be it tonsils, sinuses, prostate, gall bladder, appendix or what not. The removal of these infections depends, of course, upon their location, and often is not nearly so practical as the removal of dental infections.

In conjunction with the removal of accessible foci, we often have occasion to resort to local treatment in the region of the secondary focus. For example, in case of a joint involvement, we supplement the removal of foci with casts applied to the joints, followed by bakes and massages. In case of an iritis, we dilate the pupil with atropin and rest the eye by bandaging it shut. Naturally, this subsidiary treatment varies with the location of the secondary foci; the general principles involved being rest from function and the stimulation of hyperemia.

There are certain conditions, let us take for example, syphilis and tuberculosis, which, although entirely separate etiologically from focal infection, nevertheless are benefited by the removal of foci. This is readily explained by assuming that the body is relieved of an added load, and that it is thus rendered better able to fight the uncomplicated syphilitic or tuberculous infection than when a focal infection coexisted. In this connection, the prophylactic removal of foci of infection, wherever found, should be urged. The fact that the foci are inactive and that secondary foci have not yet been established, does not mean that such inactivity will continue indefinitely. The lack of secondary foci may be due to the fact that the lesion is draining freely (as in the milder degrees of pyorrhoea), or to the fact that the body has been able to wall off the infection, or that the patient has sufficient immunity to prevent the re-establishment of secondary foci. It is evident, however, that none of these conditions are necessarily permanent; that is to say, they are not a guarantee against subsequent systemic involvement. The old adage concerning an ounce of prevention is just as apropos here as elsewhere. Prophylaxis is just as important in the field of focal infection, as in any other diseased condition.

Due to the fact that many foci are inaccessible or difficult to clear up, we have occasion to supplement our local treatment of foci with general measures, whose purpose it is to build up bodily resistance to the point where the body can overcome what infectious foci we are forced to leave within its tissues. It is in this field that the future's great promise lies, as far as the treatment of focal infection is concerned. Measures which we may employ in the hope of accomplishing the above mentioned results are: Autogenous vaccines, ultra-violet light, Roentgen rays, and parathyroid extract. The goal of our ambitions would be reached were we able to dispense with the surgical removal of foci and devote our entire attention to the administration of these resistance-building agents. However, in our present state of knowledge, we are forced to rid the body by surgical means of as much of the load of infection as lies within our power, and to supplement this local treatment with general measures directed toward the building up of resistance against the remaining inaccessible foci.

[*Since above was received for publication, Doctor Wisner, still working under the original grant and association, has carried his work further, as shown in the subjoined brief article.*—EDITOR.]

A COMPARATIVE STUDY OF THE GENERAL SYSTEMIC AND DENTAL CONDITIONS OF FOURTEEN DENTAL STUDENTS*

By DR. F. P. WISNER, M. D.

The etiology of periodontoclasia still lies in obscurity. There are those who urge that purely local factors are wholly responsible for the condition. On the other hand are the men who blame systemic factors. There are doubtless many who adhere to a middle course, agreeing to some extent with both extremes.

This work was undertaken in the hope that it might help to solve this problem of the etiology of periodontoclasia. A group of dental students in their junior year were selected as subjects for examination. They were chosen for a number of reasons. In

*Aided by grants from the Carnegie Corporation, the American Dental Association, and the Associated Radiograph Laboratories.

the first place, it was felt that these young men would more willingly co-operate with our efforts if the object of our study was explained to them. In the second place, it was felt desirable to pick young subjects, since in young persons we would be more apt to find pure disease entities, uncomplicated by the many factors which appear during advancing years.† In return for the privilege of studying these patients, we were able to offer them the advantages of a thorough dental and medical examination, along with any appropriate advice and treatment that was deemed merited.

The dental examinations were made by Dr. Clayton Westbay, and were aimed particularly at the detection of early stages of gingivitis.

The medical examinations were made by the writer, and were of the same character as the average patient entering the University of California Hospital receives. Any abnormalities found were then followed up in more detail, and free recourse was made to the opportunity of consulting specialists, especially in the field of rhinolaryngology. Particular attention was paid to the determination of the existence of all foci of infection, almost all the cases being submitted to nose and throat examination and prostatic massages. Blood Wassermans were run on all the subjects, and in each case the urine was submitted to routine examination. It was hoped to obtain a complete blood count on all the cases, but we were unfortunately unable to secure the technical assistance.

In the table are listed the presence and degree, or absence of both caries and periodontoclasia. Both active and healed conditions are noted. From the medical standpoint all abnormalities, however trivial, were recorded, in the hope that some correlation might be possible. Only the abnormal medical findings are indicated.

	Age		Caries		Periodontia		
J. E.	22		+	+			+
T. D.	24	Deviated nasal septum	+	+			+
R. G.	24	Gassed in France	+				+
E. V.	22	Slight emphysema	+				—
F. T.	26	Acne	+		+		+
N. C.	21	Infected tonsils, thickened nasal septum	—				—
E. H.	29	Baldness, infected tonsils, inguinal hernia	+	+	+		+
L. O.	24	Baldness, infected tonsils, deviated nasal septum	—		+		+
W. B.	26	Asthma, hay-fever, cholecystitis	—		—		
W. B.	28	Constipation, chronic appendicitis, cervical lymphadenopathy, pulmonary tuberculosis (?)	+	+	+		+
T. D.	33	Moderate baldness, acne, arterial hypotension, herpes progenitalis, infected tonsils	+	+	+	+	+
D. A.	21	Amebic dysentery, cervical lymphadenopathy	+			—	
M. S.	31	Moderate baldness, orthostatic albuminuria, lordosis	+	+	+	+	+
B. T.	20	Acne, arterial hypotension, gastric ulcer (?)		+		+	

Note: — means free from caries or periodontoclasia, while + means presence of either of these diseases. The number of + signs indicates, roughly, the degree of involvement.

† As will be noted by reference to the table, the ages of the men examined ranged all the way from 20 to 33.

A study of the foregoing table reveals several interesting facts. In the first place, the patients with few medical defects may or may not have dental disease. The one patient in whom no medical defects were noted had a certain degree of both caries and periodontoclasia. Secondly, those patients who had a greater number of medical defects, showed no uniformity in the degree of dental involvement. Studied from the dental standpoint, there seems to be no correlation between caries and medical defects. In regard to periodontoclasia, the only possible significant fact that we can discover is that all but one of the cases showing a moderate or severe degree of periodontoclasia show also some type of dermatological involvement. This was acne in some cases, and partial baldness in others. One of the cases showing only a mild degree of periodontoclasia had a severe case of acne. All the other cases with mild or without periodontoclasia, showed a healthy skin in all respects.

This connection between periodontoclasia and dermatological diseases, while rather striking in this small series of cases, may be a mere coincidence. On the other hand, it may be a matter of great significance. This series of cases is too small for any lengthy deductions to be drawn. We, therefore, recommend to those who are interested in the etiology of peridental disease that they make note of any concomitant dermatological diseases, in order that a large enough series of cases may be recorded.

Pernicious Anemia, Following Ileostomy—The absorption of hemolytic, myelotoxic or neurotoxic material from the contents of the small or large intestine has been regarded as more than a plausible possibility in pernicious anemia because of the prominence of gastro-intestinal symptoms, the atrophy of the gastric and intestinal mucous membrane, and the occasional association of pernicious anemia with intestinal stricture and also parasitic disease. This belief led C. F. Dixon, J. G. Burns and H. Z. Giffin, Rochester, Minn. (Journal A. M. A.), to the decision that, under favorable circumstances, they would recommend temporary elimination of the colon by means of ileostomy in cases of pernicious anemia, with a view to the determination of the influence of colonic absorption on the course of the disease. Ileostomy may be performed with minimal risk, and, should prolonged improvement occur, ileosigmoidostomy could be performed later, not removing the colon, but excluding it as a mucous tube. Six cases are reported. The patients have all shown the temporary improvement that so frequently follows any treatment for pernicious anemia. All have maintained a good appetite, even with the recurrence of anemia. They all lost the icteroid tint, and it did not reappear even in those who later became anemic. Glossitis recurred in only one case when irrigation of the colon became difficult, and this disappeared in a few days after the colon could be flushed. Probably the most striking feature has been the disappearance of parethesias in all but one case, in which there was very marked improvement. This patient had moderately advanced cord changes and walked with extreme difficulty; even so, the parethesias have not been troublesome since ileostomy, and the patient is able to walk without assistance. One patient showed slight improvement objectively and on neurologic examination. Two patients of the series died from conditions unrelated to pernicious anemia. Two have done unusually well. Two have had a recurrence of the anemia. One patient, who had very marked manifestations of the disease, has been in excellent condition for eleven months. Ileostomy cannot at present be advocated as a therapeutic measure, but in small groups of cases it is justifiable until its effect is definitely known. The procedure alters certain features of pernicious anemia, and may lead to more important results.